WE CLAIM:

1. A flat-panel display comprising:

a first plate structure for emitting electrons;

a second plate structure, situated opposite the first plate structure, for emitting light to produce an image upon receiving electrons emitted by the first plate structure, an electric field of average strength E_{AV} being directed from the second plate structure to the first plate structure during operation of the display; and

a spacer situated between the plate structures, the spacer comprising a spacer wall having a face that extends at least partway from either plate structure to the other plate structure, the wall's face having roughness which, as approximated by identical parallel cylindrical pores of pore diameter d_P, corresponds to a wall porosity of at least 10% along the wall's face and a pore height h_P of at least 15% of pore height parameter h_{MD} that equals $\sqrt{2d_P\mathcal{E}_{2DMD}/eE_{AV}}$, where e is the electron charge, and $\mathcal{E}_{2IMD}$ is the median departure energy of secondary electrons emitted by the wall.

2. A display as in Claim 1 wherein the roughness in the wall's face inhibits secondary electrons emitted by the wall from escaping the wall.

3. A display as in Claim 1 wherein the representation of the roughness in the wall's face by the cylindrical pores ideally has the same total roughness-modified electron yield coefficient as actually occurs with the roughness in the wall's face.

4. A display as in Claim 1 wherein median departure energy $\mathcal{E}_{2DMD}$ is 5 - 15 eV.

5. A display as in Claim 1 wherein pore height h_p is at least 50% of pore height parameter h_{MD}.

6. A display as in Claim 5 wherein pore height h_p is at least 90% of pore height parameter h_{MD}.

7. A display as in Claim 1 wherein the wall porosity is at least 20% along the wall's face.

8. A display as in Claim 1 wherein the wall porosity is at least 40% along the wall's face.

9. A display as in Claim 1 wherein the roughness approximated by the cylindrical pores is present along largely all of the wall's face.

10. A display as in Claim 1 wherein the roughness in the wall's face comprises depressions in the wall's face.

11. A display as in Claim 10 wherein the depressions comprise pores.

12. A display as in Claim 11 wherein the pores have an average diameter of 1 - 1,000 nm.

13. A display as in Claim 10 wherein the depressions comprise three-dimensionally rounded recessions.

14. A display as in Claim 13 wherein most of the rounded recessions have portions of roughly constant radius of curvature.

15. A display as in Claim 10 wherein the wall comprises multiple grains having outer grain surfaces

that at least partially define the wall's face, the depressions comprising valleys generally formed by the outer grain surfaces of adjoining ones of the grains.

16. A display as in Claim 15 wherein, along the upper halves of the heights of the outer grain surfaces, the outer grain surfaces generally visible from the first plate structure are of greater average steepness than the outer grain surfaces generally visible from the second plate structure.

17. A display as in Claim 10 wherein the depressions comprise recessions generally shaped like notches, each defined by first and second notch surfaces that intersect each other.

18. A display as in Claim 17 wherein the notches extend generally parallel to one another, the second notch surface of each notch being steeper than, and closer to the second plate structure than, the first notch surface of that notch along a plane extending generally parallel to either plate structure and to the wall.

19. A display as in Claim 10 wherein the depressions comprise trenches.

20. A display as in Claim 1 wherein the roughness in the wall's face comprises protuberances in the wall's face.

21. A display as in Claim 20 wherein the protuberances overlie a generally smooth portion of the wall's face.

22. A display as in Claim 20 where the protuberances comprise ridges.

23. A display as in Claim 20 wherein the protuberances comprise spires.

24. A display as in Claim 20 wherein the protuberances comprise material of different chemical composition than material of the wall directly below the protuberances.

25. A display as in Claim 20 wherein the protuberances comprise particles.

26. A display as in Claim 20 wherein the protuberances comprise pillars.

27. A display as in Claim 1 wherein the wall comprises at least one of the following materials generally along the wall's face: (a) carbon; (b) a composition of carbon and at least one of silicon, nitrogen, and hydrogen; (c) a composition of boron and at least one of carbon, silicon, nitrogen, and hydrogen; (d) a composition of silicon and nitrogen; (e) oxide of at least one element in Groups 2a, 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; (f) hydroxide of at least one element in Groups 2a, 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; (g) nitride of at least one element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; and (h) carbide of at least one non-carbon element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of

Periods 2 - 6 of the Periodic Table including the lanthanides.

28. A display as in Claim 1 wherein the wall comprises at least one of the following materials along the wall's face: (a) carbon; (b) a composition of carbon and silicon; (c) a composition of boron and nitrogen; (d) oxide of at least one of beryllium, carbon, magnesium, aluminum, silicon, titanium, vanadium, chromium, manganese, iron, yttrium, niobium, molybdenum, lanthanum, cerium, praseodymium, neodymium, europium, and tungsten; (e) hydroxide of at least one of beryllium, carbon, magnesium, aluminum, silicon, titanium, vanadium, chromium, manganese, iron, yttrium, niobium, molybdenum, lanthanum, cerium, praseodymium, neodymium, europium, and tungsten; (f) nitride of at least one of aluminum, silicon, and titanium; and (g) boron carbide.

29. A display as in Claim 1 wherein the wall comprises a wall-shaped electrically non-conductive substrate having a rough face that largely forms the wall's face.

30. A display as in Claim 1 wherein the wall comprises:

a wall-shaped substrate; and

a rough layer overlying the substrate and having a rough face that largely forms the wall's face.

31. A display as in Claim 30 wherein the rough layer has an average electrical resistivity of 10^8 - 10^{14} ohm-cm at 25°C.

32. A display as in Claim 31 wherein the rough layer is of at least ten times greater resistance per unit length than the substrate.

33. A display as in Claim 30 wherein the rough layer comprises at least one of: (a) carbon; (b) a composition of carbon and at least one of silicon, nitrogen, and hydrogen; (c) a composition of boron and at least one of carbon, silicon, nitrogen, and hydrogen; (d) a composition of silicon and nitrogen; (e) oxide of at least one element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; (f) hydroxide of at least one element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; (g) nitride of at least one element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; and (h) carbide of at least one non-carbon element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides.

34. A display as in Claim 30 wherein the rough layer comprises at least one of: (a) carbon; (b) a composition of carbon and silicon; (c) a composition of boron and nitrogen; (d) oxide of at least one of carbon, aluminum, silicon, titanium, vanadium, chromium, manganese, iron, yttrium, niobium, molybdenum, lanthanum, cerium, praseodymium, neodymium, europium, and tungsten; (e) hydroxide of at least one of carbon, aluminum, silicon, titanium, vanadium, chromium, manganese, iron, yttrium, niobium, molybdenum, lanthanum, cerium, praseodymium, neodymium, europium, and tungsten; (f) nitride of at least one of aluminum and silicon; and (g) boron carbide.

35. A display as in Claim 1 wherein the wall comprises:

a wall-shaped substrate having a face along which there is roughness; and

a coating overlying the substrate's face and having a face that largely forms the wall's face, the roughness in the wall's face generally conforming to the roughness in the substrate's face.

36. A display as in Claim 35 wherein the coating has a total natural electron yield coefficient of no more than 2.5.

37. A display as in Claim 35 wherein the coating comprises at least one of: (a) carbon; (b) a composition of carbon and at least one of silicon, nitrogen, and hydrogen; (c) a composition of boron and at least one of carbon, silicon, and nitrogen; (d) oxide of at least one of titanium, chromium, manganese, iron, yttrium, niobium, molybdenum, cerium, praseodymium, neodymium, europium, and tungsten; (e) hydroxide of at least one of titanium, chromium, manganese, iron, yttrium, niobium, molybdenum, cerium, praseodymium, neodymium, europium, and tungsten; and (f) nitride of at least one of aluminum and titanium.

38. A display as in Claim 1 wherein the wall comprises:

a wall-shaped substrate;

a rough layer overlying the substrate and having a face along which there is roughness; and

a coating overlying the rough layer's face and having a face that largely forms the wall's face, the roughness in the wall's face generally conforming to the roughness in the rough layer's face.

39. A display as in Claim 38 wherein the coating has a total natural electron yield coefficient of no more than 2.5.

40. A display as in Claim 38 wherein the coating comprises at least one of: (a) carbon; (b) a composition of carbon and at least one of silicon, nitrogen, and hydrogen; (c) a composition of boron and at least one of carbon, silicon, and nitrogen; (d) oxide of at least one of titanium, chromium, manganese, iron, yttrium, niobium, molybdenum, cerium, praseodymium, neodymium, europium, and tungsten; (e) hydroxide of at least one of titanium, chromium, manganese, iron, yttrium, niobium, molybdenum, cerium, praseodymium, neodymium, europium, and tungsten; and (f) nitride of at least one of aluminum and titanium.

41. A display as in Claim 38 wherein the rough layer and coating have a composite average electrical resistivity of 10^8 - 10^{14} ohm-cm at 25°C.

42. A display as in Claim 41 wherein the rough layer and coating are together of at least ten times greater resistance per unit length than the substrate.

43. A display as in Claim 1 wherein the spacer further includes at least one face electrode overlying the wall's face.

44. A display as in Claim 1 wherein the wall comprises magnetic material at least along the wall's face.

45. A display as in Claim 44 wherein: the roughness in the wall's face inhibits secondary electrons emitted by the wall from escaping the wall; and the magnetic material of the wall further inhibits secondary electrons emitted by the wall from escaping the wall.

46. A flat-panel display comprising: a first plate structure for emitting electrons; a second plate structure, situated opposite the first plate structure, for emitting light to produce an image upon receiving electrons emitted by the first plate structure; and a spacer situated between the plate structures, the spacer comprising a main spacer body having a face that extends at least partway from either plate structure to the other plate structure, multiple pores extending into the main body along its face such that the main body has a porosity of at least 10% along the main body's face, the pores having an average diameter of 1 - 1,000 nm.

47. A display as in Claim 46 wherein the pores inhibit secondary electrons emitted by the spacer from escaping the spacer.

48. A display as in Claim 46 wherein the porosity of the main body is at least 20% along the main body's face.

49. A display as in Claim 46 wherein the porosity of the main body is at least 40% along the main body's face.

50. A display as in Claim 46 wherein the pores are present along largely all of the main body's face.

51. A display as in Claim 46 wherein the average diameter of the pores is 5 - 1,000 nm.

52. A display as in Claim 46 wherein the average diameter of the pores is 1 - 20 nm.

53. A display as in Claim 46 wherein the pores extend approximately perpendicular to the main body's face.

54. A display as in Claim 46 wherein the main body comprises a porous electrically non-conductive substrate.

55. A display as in Claim 54 wherein the substrate comprises at least one of: (a) oxide of at least one non-carbon element in Groups 2a, 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; (b) hydroxide of at least one non-carbon element in Groups 2a, 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; (c) nitride of at least one non-carbon element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; and (d) carbide of at least one non-carbon element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides.

56. A display as in Claim 54 wherein the substrate comprises at least one of: (a) oxide of at least one of beryllium, magnesium, aluminum, silicon,

titanium, vanadium, chromium, manganese, iron, yttrium, niobium, molybdenum, lanthanum, cerium, praseodymium, neodymium, europium, and tungsten; (b) hydroxide of at least one of beryllium, magnesium, aluminum, silicon, titanium, vanadium, chromium, manganese, iron, yttrium, niobium, molybdenum, lanthanum, cerium, praseodymium, neodymium, europium, and tungsten; (c) aluminum nitride; and (d) silicon carbide.

57. A display as in Claim 54 wherein the substrate is shaped generally like a wall.

58. A display as in Claim 54 wherein the main body further includes a coating overlying the substrate in a generally conformal manner.

59. A display as in Claim 58 wherein the coating is of lower total natural electron yield coefficient than the substrate.

60. A display as in Claim 58 wherein the coating has a total natural electron yield coefficient of no more than 2.5.

61. A display as in Claim 58 wherein the coating comprises at least one of: (a) carbon; (b) a composition of carbon and at least one of silicon, nitrogen, and hydrogen; (c) a composition of boron and at least one of carbon, silicon, and nitrogen; (d) oxide of at least one of titanium, chromium, manganese, iron, yttrium, niobium, molybdenum, cerium, praseodymium, neodymium, europium, and tungsten; (e) hydroxide of at least one of titanium, chromium, manganese, iron, yttrium, niobium, molybdenum, cerium, praseodymium, neodymium, europium, and tungsten; and (f) nitride of at least one of aluminum and titanium.

62. A display as in Claim 58 wherein:

the coating comprises carbon; and

the substrate comprises oxide of at least one of aluminum, titanium, and chromium.

63. A display as in Claim 62 wherein the carbon comprises at least one of graphite, amorphous carbon, and diamond-like carbon.

64. A display as in Claim 46 wherein the main body comprises:

a substrate; and

a porous electrically non-conductive layer overlying the substrate.

65. A display as in Claim 64 wherein the porous layer has an average electrical resistivity of 10^8 - 10^{14} ohm-cm at 25°C.

66. A display as in Claim 65 wherein the average electrical resistivity of the porous layer is 10^9 - 10^{13} ohm-cm at 25°C.

67. A display as in Claim 65 wherein the porous layer is of at least ten times greater resistance per unit length than the substrate.

68. A display as in Claim 65 wherein the porous layer has an average thickness of no more than 20 μm.

69. A display as in Claim 68 wherein the average thickness of the porous layer is at least 20 nm.

70. A display as in Claim 64 wherein the porous layer has a porosity of at least 20% along a face thereof spaced apart from the substrate.

71. A display as in Claim 70 wherein the porosity of the porous layer is at least 40% along the porous layer's face.

72. A display as in Claim 64 wherein the porous layer comprises at least one of: (a) carbon; (b) a composition of carbon and at least one of silicon, nitrogen, and hydrogen; (c) a composition of boron and at least one of carbon, silicon, nitrogen, and hydrogen; (d) a composition of silicon and nitrogen; (e) oxide of at least one element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; (f) hydroxide of at least one element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; (g) nitride of at least one element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; and (h) carbide of at least one non-carbon element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides.

73. A display as in Claim 64 wherein the porous layer comprises at least one of: (a) carbon; (b) a composition of carbon and silicon; (c) a composition of boron and nitrogen; (d) oxide of at least one of carbon, aluminum, silicon, titanium, vanadium, chromium, manganese, iron, yttrium, niobium, molybdenum, lanthanum, cerium, praseodymium, neodymium, europium, and tungsten; (e) hydroxide of at least one of carbon, aluminum, silicon, titanium, vanadium,

chromium, manganese, iron, yttrium, niobium, molybdenum, lanthanum, cerium, praseodymium, neodymium, europium, and tungsten; (f) nitride of at least one of aluminum and silicon; and (g) boron carbide.

74. A display as in Claim 64 wherein the substrate is generally shaped like a wall.

75. A display as in Claim 64 wherein the main body further includes a coating overlying the porous layer in a generally conformal manner.

76. A display as in Claim 75 wherein the coating is of lower total natural electron yield coefficient than the porous layer.

77. A display as in Claim 75 wherein the coating has a total natural electron yield coefficient of no more than 2.5.

78. A display as in Claim 75 wherein the porous layer and coating have a composite average electrical resistivity of 10^8 - 10^{14} ohm-cm at 25°C.

79. A display as in Claim 75 wherein the porous layer and coating together are of at least ten times greater resistance per unit length than the substrate.

80. A display as in Claim 75 wherein the coating comprises at least one of: (a) carbon; (b) a composition of carbon and at least one of silicon, nitrogen, and hydrogen; (c) a composition of boron and at least one of carbon, silicon, and nitrogen; (d) oxide of at least one of titanium, chromium, manganese, iron, yttrium, niobium, molybdenum, cerium, praseodymium, neodymium, europium, and tungsten; (e)

hydroxide of at least one of titanium, chromium, manganese, iron, yttrium, niobium, molybdenum, cerium, praseodymium, neodymium, europium, and tungsten; and (f) nitride of at least one of aluminum and titanium.

81. A display as in Claim 75 wherein the porous layer comprises at least one of: (a) carbon; (b) a composition of carbon and at least one of silicon, nitrogen, and hydrogen; (c) a composition of boron and at least one of carbon, silicon, nitrogen, and hydrogen; (d) a composition of silicon and nitrogen; (e) oxide of at least one element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; (f) hydroxide of at least one element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; (g) nitride of at least one element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; and (h) carbide of at least one non-carbon element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides.

82. A display as in Claim 75 wherein the porous layer comprises at least one of: (a) carbon; (b) a composition of carbon and silicon; (c) a composition of boron and nitrogen; (d) oxide of at least one of carbon, aluminum, silicon, titanium, vanadium, chromium, manganese, iron, yttrium, niobium, molybdenum, lanthanum, cerium, praseodymium, neodymium, europium, and tungsten; (e) hydroxide of at least one of carbon, aluminum, silicon, titanium, vanadium, chromium, manganese, iron, yttrium, niobium, molybdenum, lanthanum, cerium, praseodymium, neodymium,

europium, and tungsten; (f) nitride of at least one of aluminum and silicon; and (g) boron carbide.

83. A display as in Claim 75 wherein:

the coating comprises carbon; and

the porous layer comprises oxide of at least one of aluminum, silicon, titanium, chromium, iron, and neodymium.

84. A display as in Claim 83 wherein the carbon comprises at least one of graphite, amorphous carbon, and diamond-like carbon.

85. A display as in Claim 75 wherein the substrate is shaped generally like a wall.

86. A display as in Claim 46 wherein the main body comprises magnetic material at least along the main body's face.

87. A display as in Claim 86 wherein:

the roughness in the main body's face inhibits secondary electrons emitted by the main body from escaping the main body; and

the magnetic material of the main body further inhibits secondary electrons emitted by the main body from escaping the main body.

88. A display as in Claim 86 wherein the main body is shaped generally like a wall.

89. A flat-panel display comprising:

a first plate structure for emitting electrons;

a second plate structure, situated opposite the first plate structure, for producing an image upon

receiving electrons emitted by the first plate structure; and

a spacer comprising (a) a primary spacer body having a face that extends at least partway from either plate structure to the other plate structure, multiple pores extending into the primary body along its face such that the primary body has a porosity of at least 10% along the primary body's face, and (b) a coating overlying the primary body's face in a generally conformal manner such that the coating has a rough face.

90. A display as in Claim 89 wherein:

the pores inhibit secondary electrons emitted by the spacer from escaping the spacer; and

the coating is of lower total natural electron yield coefficient than the primary body.

91. A display as in Claim 89 wherein the primary body comprises:

an electrically non-conductive substrate; and

a porous layer overlying the substrate.

92. A flat-panel display comprising:

a first plate structure for emitting electrons;

a second plate structure, situated opposite the first plate structure, for producing an image upon receiving electrons emitted by the first plate structure; and

a spacer situated between the plate structures, the spacer comprising (a) a spacer substrate and (b) a porous layer that overlies the substrate and has a face spaced apart from the substrate, the porous layer having an average electrical resistivity of 10^8 - 10^{14} ohm-cm at 25°C, an average thickness of no more than 20

μm, and a porosity of at least 10% along the porous layer's face.

93. A display as in Claim 92 wherein pores extending into the porous layer along its primary face inhibit electrons emitted by the spacer from escaping the spacer.

94. A flat-panel display comprising:

a first plate structure for emitting electrons;

a second plate structure, situated opposite the first plate structure, for producing an image upon receiving electrons emitted by the first plate structure; and

a spacer situated between the plate structures, the spacer comprising a main spacer body in which multiple grains have outer grain surfaces that at least partially define a rough face of the main body, the outer grain surfaces being shaped to provide the main body's rough face with a directional roughness characteristic in which, along the upper halves of the heights of the outer grain surfaces, the outer grain surfaces generally visible from the first plate structure are of greater average steepness than the outer grain surfaces generally visible from the second plate structure.

95. A display as in Claim 94 wherein:

general roughness in the main body's rough face inhibits secondary electrons emitted by the spacer from escaping the spacer; and

the directional roughness characteristic further inhibits secondary electrons emitted by the spacer from escaping the spacer.

96. A flat-panel display comprising:

a first plate structure for emitting electrons;

a second plate structure, situated opposite the first plate structure, for producing an image upon receiving electrons emitted by the first plate structure; and

a spacer situated between the plate structures, the spacer comprising a main spacer body having a rough face in which there are multiple depressions generally shaped as notches.

97. A display as in Claim 96 wherein the main body is generally shaped like a wall, each notch comprising first and second notch surfaces that intersect each other, the second notch surface being steeper than, and closer to the second plate structure than, the first notch surface along a plane extending generally perpendicular to either plate structure and to the main body so as to provide the main body's rough face with a directional roughness characteristic.

98. A display as in Claim 97 wherein:

the notches generally inhibit secondary electrons emitted by the spacer from escaping the spacer; and

the directional roughness characteristic further inhibits secondary electrons emitted by the spacer from escaping the spacer.

99. A display as in Claim 97 wherein the notches extend generally parallel to either plate structure.

100. A flat-panel display comprising:

a first plate structure for emitting electrons;

a second plate structure, situated opposite the first plate structure, for producing an image upon

receiving electrons emitted by the first plate structure; and

a spacer situated between the plate structures, the spacer comprising a main spacer body having a rough face in which there are multiple three-dimensionally rounded recessions, most of the rounded recessions having portions of roughly constant radius of curvature.

101. A display as in Claim 100 wherein the rounded recessions inhibit secondary electrons emitted by the spacer from escaping the spacer.

102. A flat-panel display comprising:

a first plate structure for emitting electrons;

a second plate structure, situated opposite the first plate structure, for producing an image upon receiving electrons emitted by the first plate structure; and

a spacer situated between the plate structures, the spacer comprising an electrically non-insulating main spacer wall having a rough face in which there are (a) depressions generally shaped as trenches or/and (b) protuberances generally shaped as ridges.

103. A display as in Claim 102 wherein the trenches or/and ridges inhibit secondary electrons emitted by the spacer from escaping the spacer.

104. A display as in Claim 102 wherein the trenches or/and ridges extend generally parallel to one another.

105. A display as in Claim 104 wherein the trenches or/and ridges extend generally parallel to either plate structure.

106. A flat-panel display comprising:

a first plate structure for emitting electrons;

a second plate structure, situated opposite the first plate structure, for producing an image upon receiving electrons emitted by the first plate structure; and

a spacer situated between the plate structures, the spacer comprising an electrically non-insulating main spacer body having a rough face in which there are protuberances generally shaped as pillars or/and spires.

107. A display as in Claim 106 wherein the pillars or/and spires inhibit secondary electrons emitted by the spacer from escaping the spacer.

108. A method comprising the steps of:

providing a spacer comprising a spacer wall having a face that has roughness which, as approximated by identical parallel cylindrical pores of pore diameter d_P, corresponds to a wall porosity of at least 10% along the wall's face and a pore height h_P of at least 15% of pore height parameter h_{MD} that equals $\sqrt{2d_P\mathcal{E}_{2DMD}/eE_{AV}}$, where e is the electron charge, $\mathcal{E}_{2DMD}$ is the median departure energy of secondary electrons emitted by the wall, and E_{AV} is electric field strength; and

positioning the spacer between first and second plate structures of a flat-panel display in which, during operation of the display, the second plate structure produces an image upon receiving electrons emitted by the first plate structure as an electric field of average strength E_{AV} is directed from the second plate structure to the first plate structure.

109. A method as in Claim 108 wherein pore height h_p is at least 50% of pore height parameter h_{MD}.

110. A display as in Claim 108 wherein the providing step entails forming the wall to comprise:

a wall-shaped substrate having a face along which there is roughness; and

a coating overlying the substrate's face and having a face that largely forms the wall's face, the roughness in the wall's face generally conforming to the roughness in the substrate's face.

111. A method as in Claim 108 wherein the providing step comprises forming the wall to comprise:

a wall-shaped substrate; and

a rough layer overlying the substrate and having a rough face that largely forms the wall's face.

112. A method as in Claim 108 wherein the providing step entails forming the wall to comprise:

a wall-shaped substrate;

a rough layer overlying the substrate and having a face along which there is roughness; and

a coating overlying the rough layer's face and having a face that largely forms the wall's face, the roughness in the wall's face generally conforming to the roughness in the rough layer's face.

113. A method as in Claim 108 wherein the providing step includes forming at least one face electrode over the wall.

114. A method comprising the steps of:

providing a spacer comprising a main spacer body having a face along which multiple pores of average diameter of 1 - 1,000 nm extend into the main body at a

porosity along the main body's face of at least 10%; and

positioning the spacer between opposing first and second plate structures of a flat-panel display in which, during display operation, the second plate structure produces an image upon receiving electrons emitted by the first plate structure.

115. A method as in Claim 114 wherein the porosity of the pores along the main body's face is at least 40%.

116. A method as in Claim 114 wherein the spacer providing step comprises:

furnishing a composite in which support and further material are interspersed with each other;

removing at least part of the further material from the composite to convert it into a porous body; and

utilizing at least a segment of the porous body as at least part of the main body.

117. A method as in Claim 116 wherein:

the composite furnishing step entails providing the support and further materials over a substrate; and

the segment utilizing step also entails utilizing at least the segment of the substrate as at least part of the main body.

118. A method as in Claim 116 wherein:

the support material comprises ceramic;

the further material comprises organic material consisting of carbon and non-carbon material; and

the further-material removing step entails removing at least part of the non-carbon material.

119. A method as in Claim 118 wherein the further-material removing step comprises at least one of (a) etching the further material and (b) pyrolizing the further material.

120. A method as in Claim 116 wherein:

the composite comprises a gel or open network of solid material;

the further material comprises liquid; and

the further-material removing step entails removing at least part of the liquid without causing the support material to completely fill space previously occupied by the removed liquid.

121. A method as in Claim 120 wherein the support material comprises at least one of: (a) oxide of at least one non-carbon element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; and (b) hydroxide of at least one non-carbon element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides.

122. A method as in Claim 120 wherein the gel comprises polymerized alkoxide.

123. A method as in Claim 116 wherein the composite furnishing step comprises:

forming a liquidous body from a composition comprising liquid, the support material, and the further material; and

removing the liquid from the liquidous body to transform it into the composite.

124. A method as in Claim 123 wherein the further-material removing step comprises at least one of (a)

etching the further material and (b) pyrolizing the further material.

125. A method as in Claim 123 wherein the support material comprises metal oxide.

126. A method as in Claim 123 wherein the further material comprises particles of the further material.

127. A method as in Claim 126 wherein the particles are roughly spherical.

128. A method as in Claim 123 wherein:

the liquidous-body forming step entails providing the composition over a substrate; and

the segment utilizing step also entails utilizing at least a segment of the substrate as at least part of the main body.

129. A method as in Claim 116 wherein the composite furnishing step comprises:

forming a layer of particles of the further material; and

introducing the support material into space between the particles.

130. A method as in Claim 129 wherein the further-material removing step comprises at least one of (a) pyrolyzing the particles and (b) etching the particles.

131. A method as in Claim 129 wherein the support material comprises metal oxide.

132. A method as in Claim 129 wherein the particles are roughly spherical.

133. A method as in Claim 129 wherein:

the layer forming step entails forming the layer of further particles over a substrate; and

the segment utilizing step also entails utilizing at least a segment of the substrate as at least part of the main body.

134. A method as in Claim 133 wherein the composite furnishing step includes providing an additional layer of support material between the substrate and the layer of further particles.

135. A method as in Claim 114 wherein the spacer providing step comprises:

anodically oxidizing at least part of a body of metal to form a porous body; and

utilizing at least part of the porous body as at least part of the main body.

136. A method as in Claim 135 wherein the metal comprises aluminum.

137. A method as in Claim 114 further including the step of forming a coating over material of the main body intended to be in the display such that the coating has a face generally conforming, in roughness, to the area of the main body's face intended to be in the display

138. A method as in Claim 137 wherein the coating has a total natural electron yield coefficient of no more than 2.5.

139. A method as in Claim 114 wherein the spacer providing step comprises:

forming a liquidous body from a composition comprising liquid, the support material, and the further material; and

removing liquid from the liquidous body to transform it into the composite.

152. A method as in Claim 143 wherein the composite furnishing step comprises:

forming a layer of particles of the further material; and

introducing the support material into space between the particles.

153. A method as in Claim 152 wherein more than a monolayer of the particles is present in the composite.

154. A method as in Claim 152 wherein no more than approximately a monolayer of the particles is present in the composite.

155. A method as in Claim 152 wherein the composite furnishing step includes providing an additional layer of support material over the substrate, the layer forming step being subsequently performed to form the layer of particles over the additional layer.

156. A method as in Claim 143 further including the step of forming a coating over material of the porous body intended to be in the display such that the coating has a face generally conforming, in roughness, to the area of the porous body's rough face intended to be in the display.

operation of the display, a spacer comprising at least a segment of the porous body.

144. A method as in Claim 143 wherein the further-material removing step comprises at least one of (a) plasma etching the further material, (b) reactive-ion etching the further material, (c) chemically etching the further material, (d) electrochemically etching the further material, and (e) pyrolyzing the further material.

145. A method as in Claim 143 wherein:

the composite furnishing step entails depositing the support and further materials over a substrate; and

the spacer further includes at least a segment of the substrate.

146. A method as in Claim 145 wherein the substrate is shaped generally like a wall.

147. A method as in Claim 143 wherein the further material is present in the composite as particles of the further material.

148. A method as in Claim 147 wherein no more than approximately a monolayer of the particles is present in the composite.

149. A method as in Claim 147 wherein more than a monolayer of the particles is present in the composite.

150. A method as in Claim 147 wherein the particles are roughly spherical.

151. A method as in Claim 143 wherein the composite furnishing step comprises:

providing a porous layer over a structural substrate such that the porous layer has an average electrical resistivity of 10^{8} - 10^{14} ohm-cm at 25°C and an average thickness of no more than 20 μm; and

utilizing at least a segment of the substrate and overlying porous layer as at least part of the main body.

140. A method as in Claim 139 wherein the average electrical resistivity of the porous layer is 10^{9} - 10^{13} ohm-cm at 25°C.

141. A method as in Claim 139 wherein the porous layer comprises at least one of: (a) oxide of at least one non-carbon element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; and (b) hydroxide of at least one non-carbon element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides.

142. A method as in Claim 114 wherein the main body is generally shaped like a wall.

143. A method comprising the steps of:

furnishing a solid composite of support material and further material interspersed with each other;

removing at least part of the further material from the composite along an exposed face of the composite to convert the composite into a porous body having a rough face in which there are depressions where the further material has been removed; and

positioning, between opposing first and second plate structures of a flat-panel display for which the second plate structure produces an image upon receiving electrons emitted by the first plate structure during

157. A method as in Claim 156 wherein the coating has a total natural electron yield coefficient of no more than 2.5.

158. A method comprising the steps of:

providing a coating over a face of a primary body into which multiple pores extend along the primary body's face such that the primary body has a porosity of at least 10% along the primary body's face; and

positioning, between opposing first and second plate structures of a flat-panel display for which the second plate structure produces an image upon receiving electrons emitted by the first plate structure during operation of the display, a spacer comprising at least a segment of the primary body and overlying coating.

159. A method as in Claim 158 wherein the porosity of the primary body is at least 40% along the primary body's face.

160. A method as in Claim 158 wherein the pores have an average diameter of 1 - 1,000 nm.

161. A method as in Claim 158 wherein the coating has a total natural electron yield coefficient of no more than 2.5.

162. A method as in Claim 158 wherein:

the primary body comprises oxide of at least one of aluminum, silicon, titanium, chromium, iron, and neodymium; and

the coating comprises carbon.

163. A method as in Claim 162 wherein the coating providing step entails chemically vapor depositing the carbon.

164. A method as in Claim 162 wherein the coating providing step entails thermally decomposing carbon-containing material over the primary body.

165. A method as in Claim 162 wherein the coating providing step comprises:

forming the primary body by a process that involves an anneal operation; and

thermally decomposing carbon-containing material over the primary body during the anneal operation.

166. A method as in Claim 158 wherein the primary body comprises:

an electrically non-conductive substrate; and

a porous layer overlying the substrate.

167. A method as in Claim 158 wherein the primary body is shaped generally like a wall.

168. A method comprising the steps of:

roughening an initial face of a primary body to form a rough face; and

subsequently positioning, between opposing first and second plate structures of a flat-panel display for which the second plate structure produces an image upon receiving electrons emitted by the first plate structure during operation of the display, a spacer comprising at least a segment of the primary body and its rough face.

169. A method as in Claim 168 wherein the face roughening step comprises at least one of (a) plasma etching the primary body along its initial face, (b) reactive-ion etching the primary body along its initial face, (c) subjecting the primary body's initial face to

an ion beam, (d) chemically etching the primary body along its initial face, (e) electrochemically etching the primary body along its initial face, and (f) pyrolyzing selected material of the primary body.

170. A method as in Claim 169 wherein the primary body comprises carbon along the primary body's initial face such that the primary body comprises carbon along the primary body's rough face.

171. A method as in Claim 168 wherein:

the primary body comprises at least two different primary-body materials along the primary body's initial face; and

the face roughening step entails selectively removing part of at least one of the primary-body materials without significantly removing at least one other of the primary-body materials.

172. A method as in Claim 171 wherein at least two of the primary-body materials are chemically bonded to one another.

173. A method as in Claim 171 wherein:

the primary body comprises a composition of carbon and silicon along the primary body's initial face; and

the material removing step entails removing silicon from the primary body along the primary body's initial face such that the primary body largely constitutes carbon along the primary body's rough face.

174. A method as in Claim 168 wherein the primary body comprises at least one of the following materials generally along the primary body's initial face: (a) carbon; (b) a composition of carbon and at least one of silicon, nitrogen, and hydrogen; (c) a composition of

boron and at least one of carbon, silicon, nitrogen, and hydrogen; (d) a composition of silicon and nitrogen; (e) oxide of at least one element in Groups 2a, 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; (f) hydroxide of at least one element in Groups 2a, 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; (g) nitride of at least one element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides; and (h) carbide of at least one non-carbon element in Groups 3b, 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, and 4a of Periods 2 - 6 of the Periodic Table including the lanthanides.

175. A method as in Claim 168 wherein the primary body comprises electrically non-conductive material.

176. A method as in Claim 168 further including the step of forming a coating over material of the primary body intended to be in the display such that the coating has a coating face generally conforming, in roughness, to the area of the primary body's rough face intended to be in the display.

177. A method as in Claim 176 wherein the coating has a total natural electron yield coefficient of no more than 2.5.

178. A method as in Claim 176 wherein the coating comprises at least one of: (a) carbon; (b) a composition of carbon and at least one of silicon, nitrogen, and hydrogen; (c) a composition of boron and at least one of carbon, silicon, and nitrogen; (d) oxide of at least one of titanium, chromium, manganese,

iron, yttrium, niobium, molybdenum, cerium, praseodymium, neodymium, europium, and tungsten; (e) hydroxide of at least one of titanium, chromium, manganese, iron, yttrium, niobium, molybdenum, cerium, praseodymium, neodymium, europium, and tungsten; and (f) nitride of at least one of aluminum and titanium.

179. A method as in Claim 168 wherein:

the primary body comprises an electrically non-conductive substrate and a primary layer formed over the substrate, the primary layer having a face that largely forms the primary body's initial face; and

the roughening step entails removing material of the primary layer without significantly attacking the substrate.

180. A method as in Claim 179 further including the step of forming a coating over material of the primary layer intended to be in the display such that the coating has a face generally conforming, in roughness, to the area of the primary body's rough face intended to be in the display.

181. A method as in Claim 180 wherein the coating has a total natural electron yield coefficient of no more than 2.5.

182. A method as in Claim 168 wherein the face roughening step comprises selectively etching the primary body along its initial face to form the rough face in a selected pattern of depressions.

183. A method as in Claim 182 wherein the depressions comprise trenches.

184. A method as in Claim 168 wherein the primary body is shaped generally like a wall.

185. A method comprising the steps of:

providing a porous layer over a substrate such that the porous layer has an average electrical resistivity of $10^8 - 10^{14}$ at 25°C, an average thickness of no more than 20 μm, and a porosity of at least 10% along a face thereof spaced part from the substrate; and

positioning, between opposing first and second plate structures of a flat-panel display for which the second plate structure produces an image upon receiving electrons emitted by the first plate structure during operation of the display, a spacer comprising at least a segment of the substrate and overlying porous layer.

186. A method as in Claim 185 wherein the average electrical resistivity of the porous layer is $10^9 - 10^{13}$ ohm-cm at 25°C.

187. A method comprising the steps of:

providing electrically non-conductive protuberances over a primary body to form a rough face from the protuberances and any adjoining exposed material of the primary body; and

subsequently positioning, between first and second plate structures of a flat-panel display for which the second plate structure produces an image upon receiving electrons emitted by the first plate structure during operation of the display, a spacer comprising at least a segment of the primary body and overlying protuberances.

188. A method as in Claim 187 wherein the protuberances providing step comprises forming the protuberances in a selected pattern.

189. A method as in Claim 188 wherein the pattern comprises a pattern of ridges.

190. A method as in Claim 187 further including the step of forming a coating over material of the primary body and overlying protuberances intended to be in the display such that the coating has a face generally conforming, in roughness, to the area of the primary body's rough face intended to be in the display.

191. A method as in Claim 187 wherein the coating has a total natural electron yield coefficient of no more than 2.5.

192. A method as in Claim 187 wherein the primary body is shaped generally like a wall.

193. A method comprising the steps of:

etching a primary body with etchant that impinges on a microscopically rough face of the primary body substantially non-perpendicular to most of an imaginary smooth surface that macroscopically approximates the primary body's rough face; and

subsequently positioning, between opposing first and second plate structures of a flat-panel display, a spacer comprising at least a segment of the primary body.

194. A method as in Claim 193 wherein:

the second plate structure is operable to produce an image upon receiving electrons emitted by the first

plate structure during operation of the display, the display being characterized by a forward electron-travel direction from the first plate structure to the second plate structure generally along the spacer; and,

relative to the spacer as positioned between the plate structures, the etchant has a substantial etch component in the forward electron-travel direction.

195. A method as in Claim 194 wherein the etchant has substantially no etch component in a direction opposite to the forward electron-travel direction.

196. A method as in Claim 194 wherein the body etching step causes a directional roughness characteristic indicative of the forward electron-travel direction to be imparted to the primary body's rough face.

197. A method as in Claim 196 wherein:

general roughness in the primary body's rough face inhibits secondary electrons emitted by the spacer during operation of the display from escaping the spacer; and

the directional roughness characteristic further inhibits secondary electrons emitted by the spacer during operation of the display from escaping the spacer.

198. A method as in Claim 194 wherein the primary body comprises multiple grains having outer grain surfaces that at least partially define the primary body's rough face.

199. A method as in Claim 198 wherein, along the upper halves of the heights of the outer grain surfaces, the outer grain surfaces generally visible

from the forward electron-travel direction becomes steeper during the etching step.

200. A method as in Claim 194 further including, between the body etching and spacer positioning steps, the step of forming a coating over the primary body's rough face.

201. A method as in Claim 194 wherein the coating has a total natural electron yield coefficient of no more than 2.5.

202. A method as in Claim 194 wherein the etchant impinges on the primary body's rough face at an average angle of 20 - 50° relative to the forward electron-travel direction.

203. A method as in Claim 194 wherein the etchant comprises ions.

204. A method as in Claim 203 wherein the ions comprise inert gas ions.

205. A method comprising the steps of:

forming a precursor pedestal layer over a substrate;

providing particles over the precursor layer;

furnishing pillars over the substrate according to a procedure that comprises removing material of the precursor layer not covered by the particles such that remaining material of the precursor layer comprises pedestals respectively underlying the particles, each pillar comprising a different one of the pedestals; and

subsequently positioning, between first and second plate structures of a flat-panel display for which the second plate structure produces an image upon receiving

electrons emitted by the first plate structure during operation of the display, a spacer comprising at least a segment of the substrate and overlying pillars.

206. A method as in Claim 205 wherein the removing step in the procedure of the furnishing step entails etching the precursor layer using the particles as masks to protect underlying material of the precursor layer.

207. A method as in Claim 205 wherein the procedure of the furnishing step includes removing the particles.

208. A method as in Claim 205 further including the step of forming a coating over material of the substrate and pillars intended to be in the display such that the coating has a face generally conforming in roughness to the pillars intended to be in the display.

209. A method as in Claim 205 wherein the coating has a total natural electron yield coefficient of no more than 2.5.

210. A method as in Claim 205 wherein the substrate is shaped generally like a wall.

211. A method comprising the steps of:

providing a layer of spires over a substrate; and

subsequently positioning, between first and second plate structures of a flat-panel display for which the second plate structure produces an image upon receiving electrons emitted by the first plate structure during operation of the display, a spacer comprising at least a segment of the substrate and overlying spires.

212. A method as in Claim 211 wherein the spires point largely away from the substrate.

213. A method as in Claim 211 wherein the spires largely adjoin one another at their bottoms.

214. A method as in Claim 211 further including the step of forming a coating over material of the substrate and overlying spires intended to be in the display such that the coating has a face generally conforming, in roughness, to the spires intended to be in the display.

215. A method as in Claim 211 wherein the coating has a total natural electron yield coefficient of no more than 2.5.

216. A method as in Claim 211 wherein the substrate is shaped generally like a wall.